Estimate of Dose Equivalent from the Test Burn on April 6, 2000

4/11/00

Three filters were sampled, one downwind and two upwind of the burn area.
One of the three samples, the downwind, had alpha activity above the lab detection limit.

Sample ID	Description	Alpha Activity	Alpha Activity	Activity Corrected for Area	Volume Sampled	Activity Concentration
		dpm	Ci	Ci	m3	Ci/m3
AQM-TB-H1	Downwind	2.034	9.245E-13	2.2E-11	78.69	2.8E-13
AQM-TB-H2	Upwind	0.114	5.18E-14	1.2E-12	65.61	1.9E-14
AQM-TB-H3	Upwind	0.101	4.59E-14	1.1E-12	57.45	1.9E-14
AQM-TB-HB	Field Blank	-0.297	-1.35E-13	-3.2E-12	0	NA

Filter Sample Area (L x W)	7	9 inches
Filter Punch Area (Diameter)	47	mm
Area Correction	23.4	

With the conservative assumption that all of this activity is due to Plutonium-239 this activity concentration may be compared to that concentration that yields a EDE of 1 mrem. Extrapolating Appendix D, Table 2 of 40 CFR 61, Subpart H, which limits the average annual Pu-239 ambient air concentration to 2E-15 Ci (2E-3 pCi), the annual concentration for a one mrem EDE would be 2E-16 Ci. Converting from an annual inhalation to one lasting the period of the test burn yields the following:

Sample ID	Description	Isotope	Annual EDE	Equivalent Concentration	Sample Duration	Burn Period Equivalent Conc.	Extrapolated Burn Equivalent EDE (Worker Downwind)
			mrem	Ci/m3	min	Ci/m3	mrem
AQM-TB-H1	Downwind	Pu-239	1	2E-16	82	1.3E-12	0.21

These estimates indicate that the workers immediately downwind of the burn were exposed to concentrations less than those that would result in an EDE of 1 mrem.